

# N-Channel Enhancement Mode MOSFET

## 1. Product Information

### 1.1 Features

- Surface-mounted package
- Extremely low threshold voltage
- Advanced trench cell design
- ESD protected

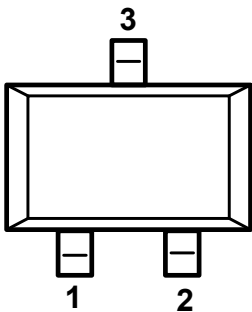
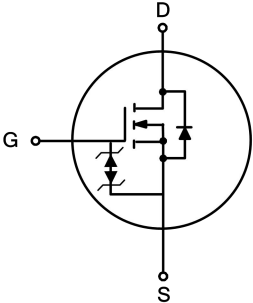
### 1.2 Applications

- Portable appliances

### 1.3 Quick reference

- $BV \geq 60\text{ V}$
- $P_{tot} \cong 0.83\text{ W}$
- $I_D \cong 0.5\text{ A}$
- $R_{DS(ON)} \leq 2\ \Omega @ V_{GS} = 10\text{ V}$
- $R_{DS(ON)} \leq 2.7\ \Omega @ V_{GS} = 4.5\text{ V}$

## 2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 Top View SOT523-3L	
2	Source(S)		
3	Drain(D)		

## 3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{DS}$	Drain-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	60	-	V
$V_{GS}$	Gate-Source Voltage	$T_A = 25\text{ }^\circ\text{C}$	-	$\pm 20$	V
$I_D^*$	Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	0.5	A
$I_{DM}^{*,**}$	Pulsed Drain Current	$T_A = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	2	A
$P_{tot}^*$	Total Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	-	0.83	W
$T_{stg}$	Storage Temperature		- 55	150	$^\circ\text{C}$
$T_J$	Junction Temperature		-	150	$^\circ\text{C}$
$I_S^*$	Diode Forward Current	$T_A = 25\text{ }^\circ\text{C}$	-	0.5	A
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	150	$^\circ\text{C} / \text{W}$

Notes :

- \* Surface Mounted on 1 in<sup>2</sup> pad area,  $t \leq 10\text{ sec}$
- \*\* Pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$
- \*\*\* Limited by bonding wire

## 4. Marking Information

Product Name	Marking
KJ2N7002T	<div style="display: inline-block; border: 1px solid black; padding: 2px;"> <b>702</b>  <b>YWXX</b> </div> <b>YWXX:</b> <b>Date Code</b>

## 5. Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
KJ2N7002T	SOT523				

Note: KUAJIEXIN defines " Green " as lead-free ( RoHS compliant ) and halogen free ( Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC / JEDEC J-STD-020C )

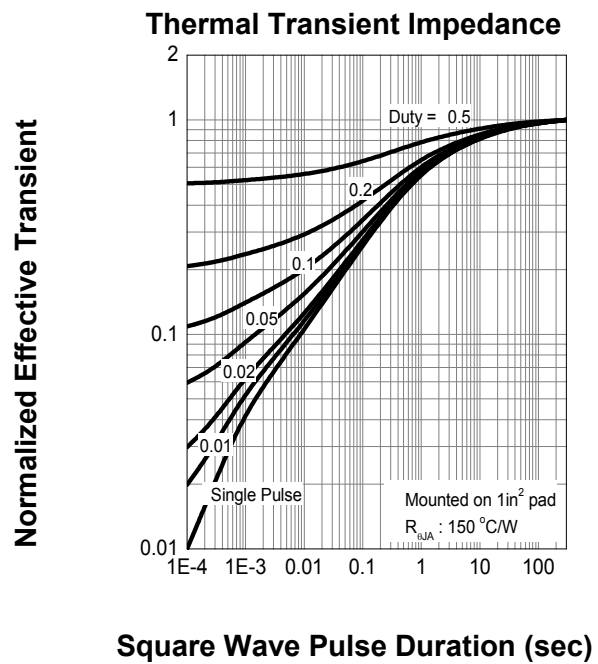
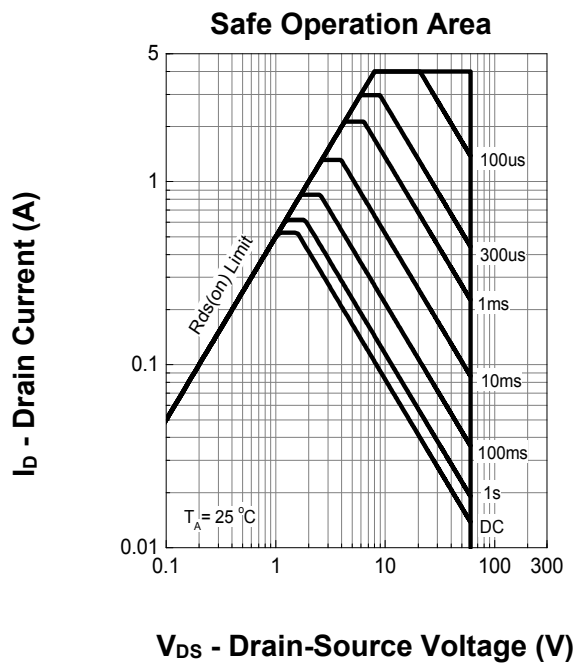
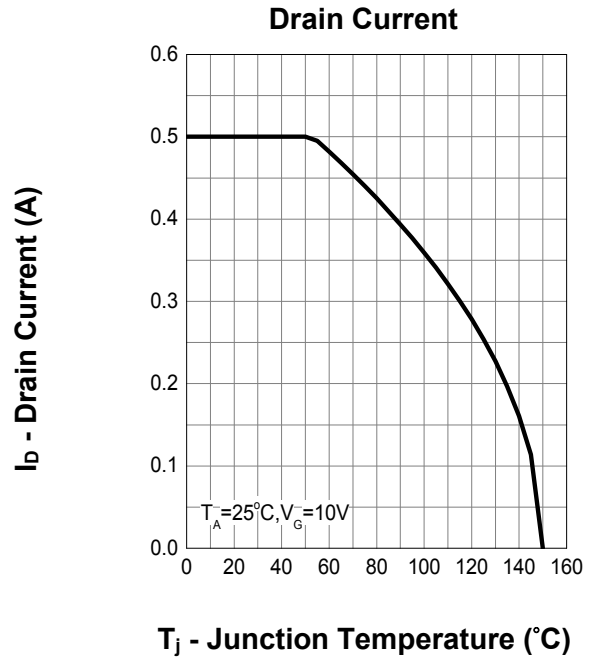
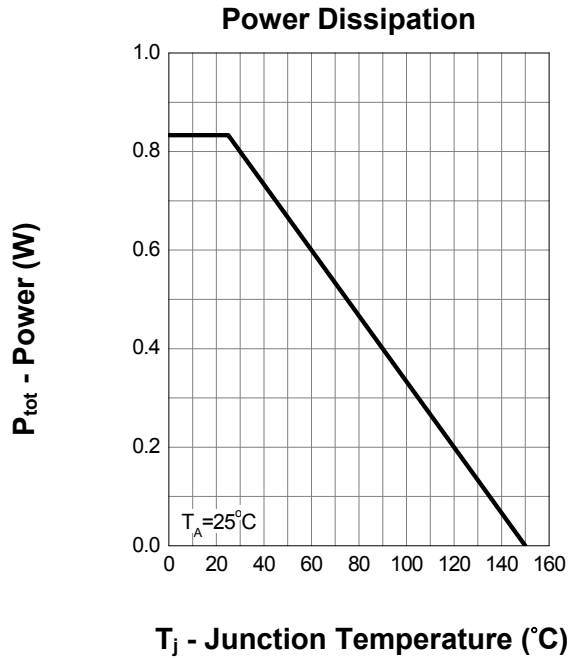
**6. Electrical Characteristics** (  $T_A = 25\text{ }^\circ\text{C}$  Unless Otherwise Noted )

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\text{ }\mu\text{A}$	60	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\text{ }\mu\text{A}$	1	1.5	2	V
$I_{DSS}$	Drain Leakage Current	$V_{DS} = 48\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$
$I_{GSS}$	Gate Leakage Current	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	-	$\pm 0.8$	-	$\mu\text{A}$
$R_{DS(ON)}^a$	On-State Resistance	$V_{GS} = 10\text{ V}, I_{DS} = 0.5\text{ A}$	-	1.5	2	$\Omega$
		$V_{GS} = 4.5\text{ V}, I_{DS} = 0.2\text{ A}$	-	2.0	2.7	
<b>Diode Characteristics</b>						
$V_{SD}^a$	Diode Forward Voltage	$I_{SD} = 0.5\text{ A}, V_{GS} = 0\text{ V}$	-	0.85	-	V
$t_{rr}$	Reverse Recovery Time	$I_{SD} = 0.5\text{ A}, dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	30	-	ns
$Q_{rr}$	Reverse Recovery Charge		-	29	-	nC
<b>Dynamic Characteristics<sup>b</sup></b>						
$R_G$	Gate Resistance	$V_{GS} = V_{DS} = 0\text{ V}, F = 1\text{ MHz}$	-	200	-	$\Omega$
$C_{iss}$	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}$ Frequency = 1 MHz	-	14.7	-	pF
$C_{oss}$	Output Capacitance		-	0.76	-	
$C_{rss}$	Reverse Transfer Capacitance		-	0.63	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 30\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 25\text{ }\Omega, R_L = 60\text{ }\Omega,$ $I_{DS} = 0.5\text{ A}$	-	2.7	-	ns
$t_r$	Turn-on Rise Time		-	2.5	-	
$t_d(off)$	Turn-off Delay Time		-	13	-	
$t_f$	Turn-off Fall Time		-	8	-	
$Q_g$	Total Gate Charge	$V_{GS} = 4.5\text{ V}, V_{DS} = 10\text{ V},$ $I_{DS} = 0.5\text{ A}$	-	0.44	-	nC
$Q_{gs}$	Gate-Source Charge		-	0.2	-	
$Q_{gd}$	Gate-Drain Charge		-	0.1	-	

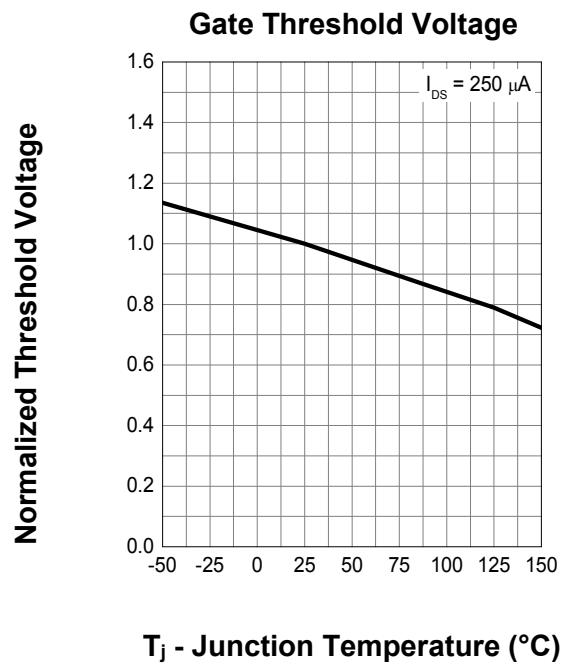
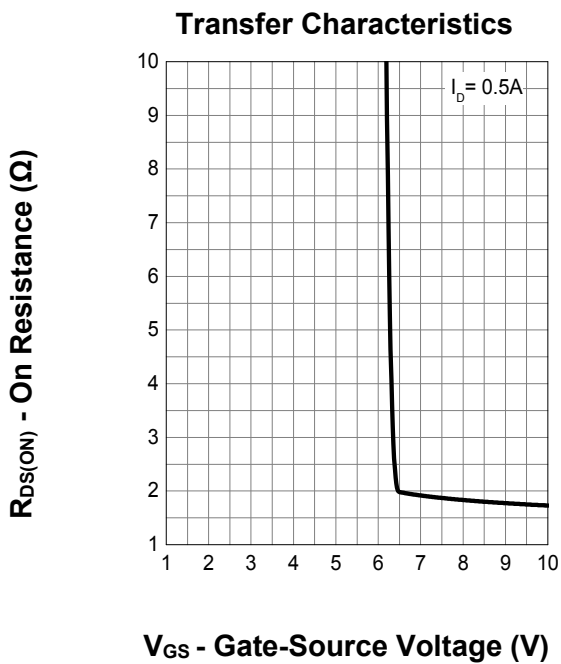
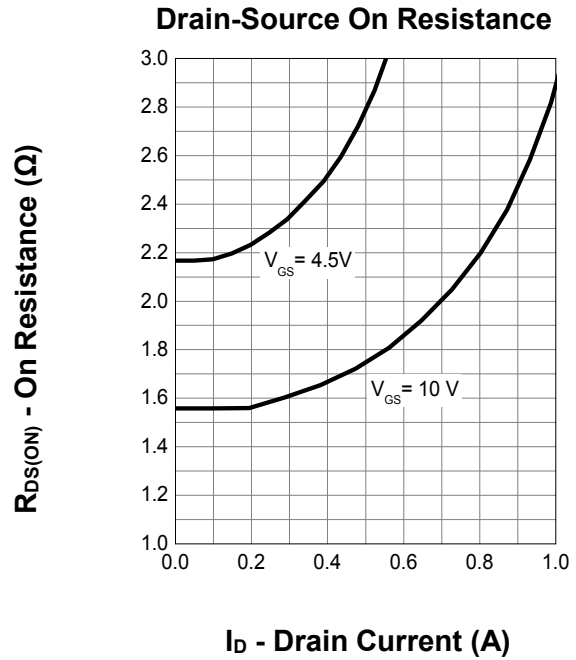
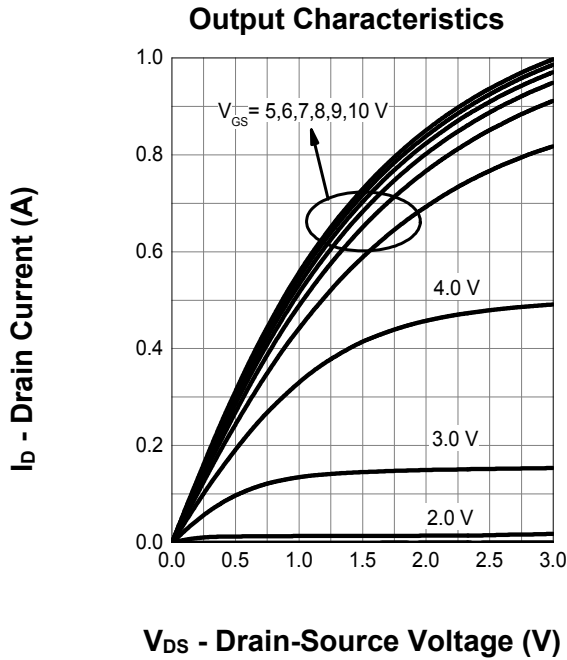
Notes :

- a : Pulse test ; pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$   
 b : Guaranteed by design, not subject to production testing

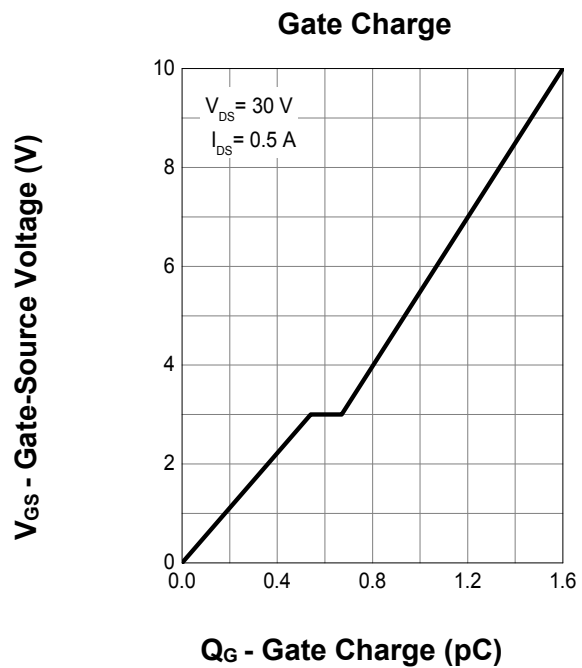
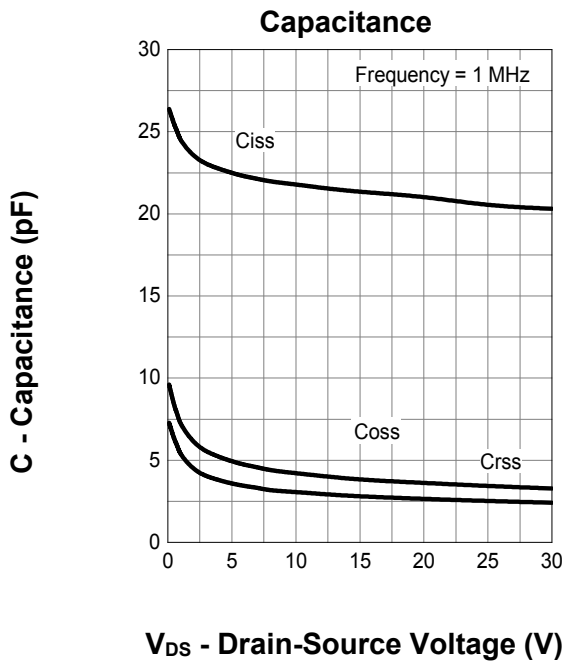
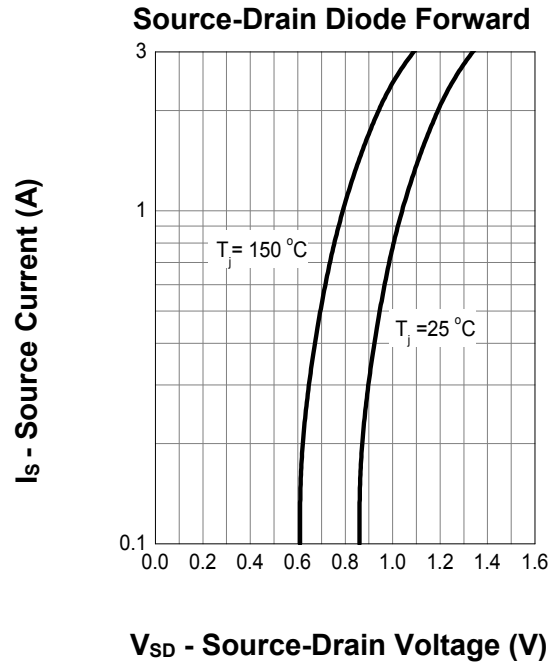
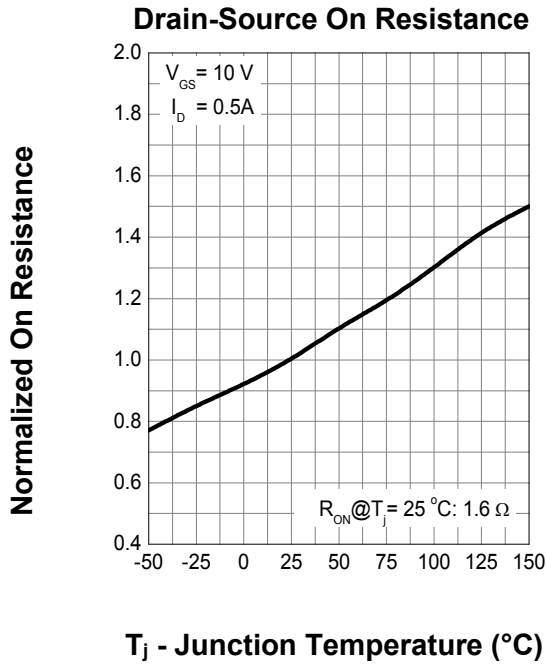
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)

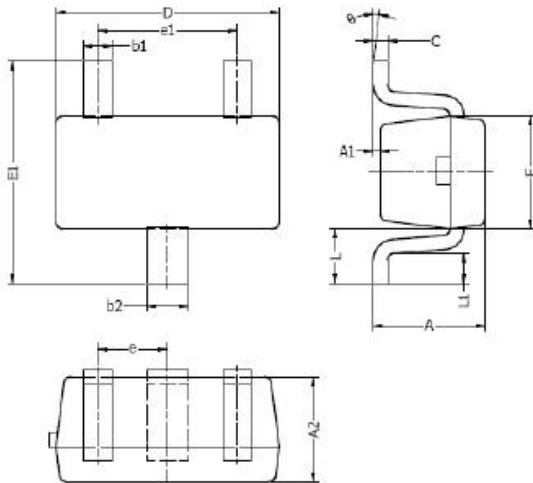


## 7. Typical Characteristics (cont.)

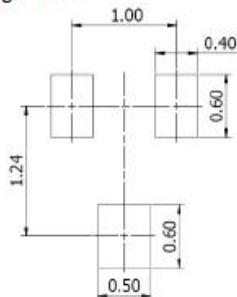


## 8. Package Dimensions

### SOT523



Typical Soldering Pattern:



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.90	0.028	0.035
A1	0.00	0.10	0.000	0.004
A2	0.70	0.80	0.028	0.031
b1	0.15	0.25	0.006	0.010
b2	0.25	0.35	0.010	0.014
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
E1	1.45	1.75	0.057	0.069
e	0.50 TYP.		0.020 TYP.	
e1	0.90	1.10	0.035	0.043
L	0.40 REF.		0.016 REF.	
L1	0.10	0.30	0.004	0.012
$\theta$	0°	8°	0°	8°

**NOTES:**

1. Above package outline conforms to JEITA EAJ ED-7500A SC-75A.
2. Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.